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MARBLE AND GRANITE SECTOR IN NWFP / FATA (A Briefing Paper)

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ACRONYMS

CFTCs	Common Facility and Training Centers
EPZs	Export Processing Zones
FATA	Federally Administered Tribal Areas
FPCCI	Federation of Pakistan Chambers of Commerce and Industry
GDP	Gross Domestic Product
MCR	Marble City at Risalpur
NWFP	North West Frontier Province
PASDEC	Pakistan Stone Development Company
PCSIR	Pakistan Council of Scientific and Industrial Research
PIDC	Pakistan Industrial Development Corporation
SDA	Sarhad Development Authority
SMEDA	Small and Medium Enterprises Development Authority
TDAP	Trade Development Authority of Pakistan

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MARBLE AND GRANITE SECTOR

Marble and granite, also referred to as "Dimensional Stone", is widely found throughout NWFP and FATA as indicated in the maps in Annex A. There are 160.2 million tons reserves of marble in the country, whereas the contribution of NWFP is 158 million tons.[1] There is huge unexplored reserves lie in the lower Balochistan (Northern Regions) and Sindh.

NWFP accounts for 75% of Pakistan's Dimensional Stone production. Approximately 85-90% of the Dimensional Stone sector is dominated by small players who extract 10 tons or more a day; another 10% extract 20 tons per day; and very few extract 100 tons a day on regular basis. As of 2005, the mining sector in NWFP, including all minerals, contributed 4% to the provincial GDP, but this is for all minerals. In FATA, the Dimensional Stone sector was estimated to be 1.4% of the tribal region's GDP according to a study done by SMEDA[2]. Marble and Granite's national share as of 2005 had been 0.8% of GDP.[3]

Production at the mines is characterized by high wastage of up to 75% that then translates into waste throughout the value chain due to the uneven sizes of the boulders that are extracted[4]. Improvements in mining at the quarry level and adoption of higher value added standards could increase industry revenues by as much as 50 folds, with NWFP in a position to capture much of this increase.[5]

The NWFP and FATA marble and granite sector is concentrated in mining and quarrying and in semi-processed output including slabs and tiles. The raw material comes in a variety of colors: beige, black, cloud white, gray, green, pink, red and white, white, and white gray. A number of these colors have been well received by the international market. In terms of value addition, the NWFP and FATA industry produce slabs (12"x12"x1")[6], tiles, chips used in making flooring, mosaics, inlay, handicrafts and table tops for office, hotel and home dining use and in kitchen. Of the existing approximately 639 quarries and 1710 processing units, industry leaders estimate that only about 10 quarries and 6-8 processing factories have the capacity to produce for the international market.[7] In NWFP, the average production of a number of processing units is 2,500 square meters per month as opposed to international standard of average production per processing unit of 5,500 square meters per month[8].

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[1] Deposits Marble & Granite – Stone Biz (March 2009, issue no. 3) – a Magazine by Pakistan Stone Development Company (PASDEC)

[2] SMEDA pre-feasibility study done in 2005.

[3] SMEDA Pre-Feasibility Study (January, 2005) , which is quoted as stating that "Since 1990 mining & quarrying has consistently contributed 0.5 percent to the Gross Domestic Product." This was all mentioned in the J.E. Austin, "FATA Marble Value-Chain Report," 2008, p.3

[4] A fairly good analysis of the sector and its requirements may be found in the "Pakistan Dimensional Stone Strategy: Square Blocks," produced in 1986 by the dimensional stone sector with support from J.E. Austin and the Government of Pakistan under the USAID funded Pakistan initiative for Strategic Development and Competitiveness (PISDAC) project that ended in May 2008. PASDEC; see also J.E. Austin & Associates FATA Marble Value-Chain Report, 2008.

[5] This information was taken both form the sector strategy developed by the industry in 2006, cited in foot note 1, and also from PASDEC.

[6] The international market prefers slabs that are 12x12x1/2 but the machinery to cut this size and then chamfer the stone is lacking.

[7] J.E. Austin & Associates FATA Marble Value-Chain Report, 2008, and discussions with the head of the Frontier Miners Association and FATA Miners Association.

[8] Information supplied by the Chairman, PASDEC.

Tables 1, 2, 3 and 4 below show details about number of mines, number of processing unit and their production, number of showrooms for display, and number workers employed by each component of the sector in NWFP/FATA. The data in the tables below corresponds to December 2009:

Table 1: Mines and Number of Workers Engaged in NWFP Mines

Area	No. of Mines	Workers/ Mine	Total Workers in Mines	Remarks
Buner	400	20	8,000	
Swat	65	20	1,300	
Maidan	140	20	2,800	
Nowshera	4	20	80	
Shabqadar	-	-	-	
Peshawar	-	-	-	
Mansehra	10	20	200	Granite Mines
Chitral	20	20	400	
TOTAL	639		12,780	

Source: Heads of the Frontier Miners Association and of the FATA Mine Owners Association

Table 2: Number of Processing Units, Production and Workers Employed (NWFP)

Area	No. of Processing Units	Production/ month (Avg.) (Sq. mtr)	Total Production/ month (Avg.) (Sq. Mtr)	Workers/ Processing Unit	Total Workers in Processing Units	Remarks
Buner	375	2,500	937,500	45	16,875	
Swat	30	2,500	75,000	45	1,350	
Maidan	150	2,500	375,000	45	6,750	
Nowshera	65	2,500	162,500	45	2,925	
Shabqadar	110	2,500	275,000	45	4,950	
Peshawar	100	2,500	250,000	45	4,500	
Mansehra	15	2,500	37,500	45	675	Granite Mines
Chitral	15	2,500	37,500	45	675	
FATA	850	2,500	2,125,000	45	38,250	
TOTAL	1,710		4,275,000		76,950	

Source: Heads of the Frontier Miners Association and of the FATA Mine Owners Association

Table 3: Number of Showrooms and Associated Workers Employed

Area	No. of Show Rooms	Workers/ Show Room	Total Workers in Show Rooms	Remarks
Buner	15	5	75	
Swat	5	5	25	
Maidan	40	5	200	
Nowshera	10	5	50	
Shabqadar	15	5	75	
Peshawar	50	5	250	
Mansehra	15	5	75	Granite Mines
Chitral	-	-	-	
FATA	-	-	-	
TOTAL	150		750	

Source: Heads of the Frontier Miners Association and of the FATA Mine Owners Association

Table 4: Direct Employment by Marble and Granite Sector, NWFP/FATA

Area	No. of Workers in Mines	No. of Workers in Processing Units	No. of Workers in Show Rooms	Total Workers
Buner	8,000	16,875	75	24,950
Swat	1,300	1,350	25	2,675
Maidan	2,800	6,750	200	9,750
Nowshera	80	2,925	50	3,055
Shabqadar	-	4,950	75	5,025
Peshawar	-	4,500	250	4,750
Mansehra	200	675	75	950
Chitral	400	675	-	1,075
FATA	-	38,250	-	38,250
TOTAL	12,780	76,950	750	90,480

Source: Heads of the Frontier Miners Association and of the FATA Mine Owners Association

KEY PROBLEMS AND BARRIERS IN THE SECTOR

1) Sub-optimal mining and quarrying techniques are the key reason of significant wastage of potential value of the total sector output.

2) The infrastructure especially road network available in the mining areas is hampering the excavation of excellent quality stones available in Mansehra and Balakot areas.[9]

3) One of the key problem for miners is to access the bank finances; mines operate on a time-bound lease basis and are not acceptable as collateral to banks because the miners do not

[9] Information on NWFP quarries and production was supplied by the head of the Frontier Miners Association and of the FATA Mine Owners Association.

outright own them. As in the case of gemstone mines, leases can become the subject of disputes with local communities with various parties coming forward to claim ownership of land on which the mine is situated. This makes banks shy of lending to the small scale mining operations in NWFP and FATA.

4) There is low investment in modern and precise technology and techniques. Reasons cited are lack of funds; scale of operations not justifying investment in modern good quality machines; and lack of workforce that could use and maintain the high precision equipment machines effectively. Hence, majority of the processing units still use equipment that does not enable them to produce slabs in sizes that fetch the best price on the domestic and international markets.

5) There is a dearth of skilled work force. This affects the quality of the finished output and deters miners and processors to invest in high precision, good quality machinery.

6) Lack of Stone Certification & Mismatch of Stone Quality and Stone Use: There is no body/instrument for Stone testing and certification in the sector. Miners and those processing the stone need to get the stones tested in order to understand the properties of their product. This will enable them to avoid marketing their stone for the wrong uses, a problem that has plagued the industry in the past. There are cases where Pakistani stone was sold without proper stone testing certification and the buyer was unable to use it appropriately for the end use for which it was intended. It is important to know whether the qualities of the stone are suitable for indoor or outdoor use, whether it can be used for cladding or flooring and so forth.

INITIATIVES UNDERTAKEN IN SUPPORT OF THE SECTOR

The effort at sector upgrading and modernization is being led by Pakistan Stone Development Company (PASDEC), which has been established under the guidance of Ministry of Industries and Production, Government of Pakistan, as Public Private Partnership. The Company is being funded primarily by the Government of Pakistan. It is a not for profit organization incorporated under section 42 of the Companies Ordinance, 1984 as subsidiary of Pakistan Industrial Development Corporation (PIDC) and was incorporated on the 21st September 2005. The Board of Directors of Pakistan Stone Development Company is made up of representatives of both the private and public sectors. A majority of Directors are from the private sector, and according to the Articles of Association of the Company, the Chairman must always be from the private sector. The purpose of creating PASDEC was to

Box 1: PASDEC Assistance to Upgrade Stone and Marble Mining

- There is a private joint venture with M/s Northern Mining Company owned by Mr. Rama producing 1,000 tons of Black Granite in square blocks in Mansehra that are currently exported to China[1]. PASDEC facilitated the company in obtaining mining permission from Director General of Mines and Minerals (DGMM) and also conducted a study on the Quarry.
- In Chitral, where the deposits are of very good quality stone, PASDEC has developed a model quarry in a joint venture with the Mr. Jalil who is in the private sector. The quarry currently produces 200 tons of square blocks per month and has an accumulated stock of 400 tons.
- In Buner, PASDEC has a joint venture with Mr Javid of M/s Nasir Mining. PASDEC has rented Quarry Machinery.
- In FATA, PASDEC has a joint venture with M/s Universal Mining, a privately owned company owned by Mr. Rahim Shah and partners. PASDEC has supplied machinery, and both have jointly leased the machinery pool equipment.
- A mine owned by former Industries Minister Jahangir Tareen in Mansehra is producing 500 tons of square bocks per month. Mr. Tareen is using highly advanced and mechanized machinery provided by PASDEC in the mine for excavation. He also built a warehouse for storage of excavated material. This warehouse facility is one of the best designed in the sector and so far has accumulated a stock of 120 containers ready for shipment[1].

modernize dimensional stone mining and processing in Pakistan.[10] Key initiatives undertaken by PASDEC include:

1) Under the two-year (2004-2006) sector development strategy, PASDEC began assisting miners employ latest techniques for efficient mining through model quarries. There are now several private mines[11] in NWFP, Baluchistan and Chitral that are being assisted by Pakistan Stone Development Company (PASDEC)[12] in producing square stones. However, this effort must be extended on a more massive scale for Pakistan's industry to gain market share.

2) As part of the implementation of the sector development strategy, PASDEC has established a pool of high-tech, expensive but requisite machinery in Risalpur (NWFP) and another in Gaddani (Karachi). The machinery in the pools is being used for extraction of square blocks (marble and granite) and subsequent processing on modern lines to finish value added products for both the domestic consumers and the export markets. This initial machinery pool[13] is in heavy demand as it is equipped with modern and up to date machinery and is commercially available to quarry owners on affordable rates. PASDEC has assessed a need to establish eight more machinery pools to meet the growing demand of the sector as the machinery pool has demonstrated impact in terms of reduction in cost of production and increased production.

3) PASDEC has received the approval from the Government of Pakistan to establish seven model production clusters or "Marble Cities". The first Marble City is being set up in Risalpur (NWFP). Located on the Nowshera Mardan Road, 27 miles east of Peshawar, the Marble City Risalpur (MCR) has a designated area of 185 acres adjacent to the Risalpur Industrial Estate and Nowshwra Export Processing Zone. MCR is located 48km from Peshawar airport and 40km from the city's dry port, the marble city is seven km away from Mardan, another marble rich district. It is close to other vast marble reserves as well. Transportation of products will have an access to the main highway, motorway and the railway track.

The total estimated development cost of project is PKR 500 million excluding the cost of land.[14] The project is funded by the Ministry of Industries and Production. It is estimated that around 6,000 direct and another 18,000 indirect workers will be employed by MCR.

The current MCR plan includes the following facilities:

a. Advanced fibre-optic telecommunication facility for telephone and internet,
b. Water recycling plant that would also ensure uninterrupted supply of water
c. Uninterrupted supply of gas
d. Uninterrupted supply of electricity by having a 132kv power plant at the site.

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[10] A fairly good analysis of the sector and its requirements may be found in the "Pakistan Dimensional Stone Strategy: Square Blocks," produced in 1986 by the dimensional stone sector with support from J.E. Austin and the Government of Pakistan under the USAID funded Pakistan initiative for Strategic Development and Competitiveness (PISDAC) project that ended in May 2008. PASDEC has continued to function with funding from the Government of Pakistan albeit not at a level that will enable the purchase of the machinery required to be responsive to growing demand in NWFP. Information on the Mansehra and Balakot area mines was provided by the head of the Frontier Miners Association who is also a Board member of PASDEC. Construction of roads leading to and from Mines r is an overall problem for a number of areas where dimensional stone deposits exist but are not yet exploited.

[11] These mines are located in NWFP (Buner), Baluschistan (Khuzdar & Mustang) & Chitral. The Provincial Mines and Mineral Authorities are the owner of the Mines which leased the mines to local people. The marble available from these mines are Beige (Baluchistan), Semi Grey/Semi White (NWFP) and White marble (Chitral).

[12] Pakistan Stone Development Company (PASDEC) has been established to drive the development of the Pakistan Marble and Granite sector and was incorporated as PASDEC on the 21th September 2005. PASDEC has been established under the guidance of the Ministry of Industries, Production and Special Initiatives, Government of Pakistan

[13] The equipment includes Heavy Earth Moving and Quarrying Machinery like Heavy Loaders, Excavators, Chainsaws, Wire Saws (Large), Wire Saws (Small), Compressors, Generators, Stitch Drills, Pneumatic Drills, Manual Drills, Down the whole Hammers, Drill Rods, Core Drill Machines, Air/ Water Pillows and Jacking Plants, etc.

[14] Visit of *PTP team to Marble City, Risalpur*.

e. Common Facility and Training Centers (CFTCs) for shared use of expensive, modern machinery to cut square dimension blocks into slabs on modern machinery. CFTCs will also have a mosaic development centre to provide industrial training in marble mosaic, handicrafts and inlays from waste marble pieces.
f. A modern machinery pool at the site. Machines like gang saw, complete polishing line (slabs and tiles), splitting machine, cross cutter, side face calibrator and chamfered plus dryer and buffer, fork lifter, slab automatic loading/unloading unit, mono-lama, gantry crane and bench butter will also be made available.
g. Modern marble warehouse facility where blocks of various shades and colors will be kept in separate lots.

KEY SECTOR STAKEHOLDERS

a) Public Sector

1. Director General, Mines & Mineral, NWFP
2. Ministry for Petroleum & Natural Resources, Government of Pakistan
3. Pakistan Stone Development Company (PASDEC)
4. Trade Development Authority of Pakistan (TDAP)
5. Small and Medium Enterprises Development Authority (SMEDA)
6. Pakistan Council of Scientific & Industrial Research (PCSIR)
7. Sarhad Development Authority (SDA)

b) Private Sector

1. FATA Mine Owners Association
2. All Pakistan Marble Industry Association
3. Frontier Mine Owners Association
4. Tribal Chamber for FATA
5. The Federation of Pakistan Chambers of Commerce and Industry (FPCCI)

c) Academia

1. Center of Excellence, NWFP University of Engineering & Technology, Peshawar[15]
2. University of Engineering and Technology (UET), Peshawar[16]

PROBLEM AREAS OF SECTOR SUPPORT

Initiatives where the Pakistan Trade Project and other related projects could contribute to the growth of the dimensional stone sector:

a) Increase the Capacity of Shared Machinery Pools: Machinery pools provide access to technology, training on proper use of machines, quarry development to produce square blocks, which have high value and reduce wastage, at the mine from its current level of 85% wastage. The machines are made available on a rental basis as a toolkit for quarry development. Based on experience to date, and based on analyses done by the sector, this can increase the value of

[15] The Center of Excellence worked on the mining geology required to develop a quarry cultivation plan under the USAID funded PISDAC project and has also tested stone for the sector, but on an irregular basis. The Center of Excellence should develop marble and granite specialists and to have a testing facility that is more available and focused on marble and granite sector needs and this view is supported by PASDEC.

[16] N.W.F.P UET is offering engineering discipline in different fields including Mining. Mining Department offers courses in B.Sc., M.Sc. and PhD in Mining Engineering and it is equipped with Mineral Processing Laboratory, Surveying Laboratory, Rock Mechanics Laboratory, Geology Laboratory, Computer Laboratory, Ventilation, Environment and Safety Laboratory. Mining Department is planning to establish Mineral Resources Engineering Research Center. The center will be equipped with latest equipment to enhance the existing research capability of the Department. PASDEC would like to have UET develop courses to train mining machinery operators and quarry mining personnel

mining production by more than 40% and even by higher percentages. This also help increase the marketability of the dimensional stones from NWFP and FATA as the sector begins to produce the more marketable square blocks rather than the irregular shaped slabs currently produced at most mines. PASDEC has established one machinery pool each in Risalpur (NWFP) and Gadani (near Karachi) however with only two sets of equipments. Industry demand for the pooled machinery suggests the need to increase the size and number of machinery pools, especially in major clusters in NWFP and in FATA. This machinery pool will cater to more of NWFP and FATA's industry to upgrade quarry mining by making the required new technology available to miners, who cannot yet afford the equipment on their own. Machinery pools are also an effective way of encouraging miners / processors to adopt latest technology and invest in it in the long run.

b) Develop Centers of Excellence Providing Shared Pool of Expensive Machinery and Training on the Use of that Machinery: Common processing facility and training center with up to date equipment for processing located at clusters and/or in zones which would enable processors to produce slabs and tiles that meet international demand for size and also finishing. The facility(s) would focus inter alia on (1) carrying out polishing of stone slabs and other products produced in a zone or cluster; (2) appropriately size tiles into 12x12x1 inch tiles and 12x12x1/2 inch tiles as demanded by the market; and (3) chamfer the polished cut to size tiles. Currently the lack of such equipment causes processors to lose 30% additional income that they could earn through proper processing of the stone.[17] The facility could also serve as a training center to upgrade the skill sets of processing industry workers and to train workers to produce new product lines; to upgrade the quality of their work and of the products they produce; as well as provide training in manufacturing of handicrafts and mosaics to make use of quarry and processing waste.

c) Upgrade stone testing facilities at the Center of Excellence, University of Peshawar and create a facility in other parts of NWFP and FATA to enable the producers to meet international market demand for detailed and tested specifications, and to provide required quality photographs and stone samples. Currently there is limited expertise to carry out the required tests and most in the industry lack adequate knowledge of the types and specifications of stone, the market requires. Knowledge of product applications is necessary for industry to market their products more effectively and to enable them to fetch higher value per unit of stone sold. The testing facilities at Peshawar could be linked to satellite testing, photographing and information dissemination points about stone quality and uses at the site of clusters and also in any zone that is created to cater to the dimensional stone sector.

d) Invest in Workforce Development and Innovation Capacity through:
   - Small-scale and other mining courses/training that enable miners better understand and appreciate why they need to access new and better technologies for exploiting their mine;
   - Develop field mining courses at UET, Peshawar to train more engineers that will able to assist with mining in the field, and to develop quarry miners as well as programs to place quarry master trainees at foreign quarries, working with universities in the recipient country; also to train scientists and engineers on the techniques of evaluating a quarry.
   - Develop a warehousing facility at existing zones/parks that can provide:
     - A one window operation for customs and inspection
     - Storing and stacking
     - Sorting and grading
     - Dressing
     - Packing
     - Display

[17] Industry sources and the Pakistan Marble and Granite Strategic Working group, "Strategic Plan," 2006, p. 19.

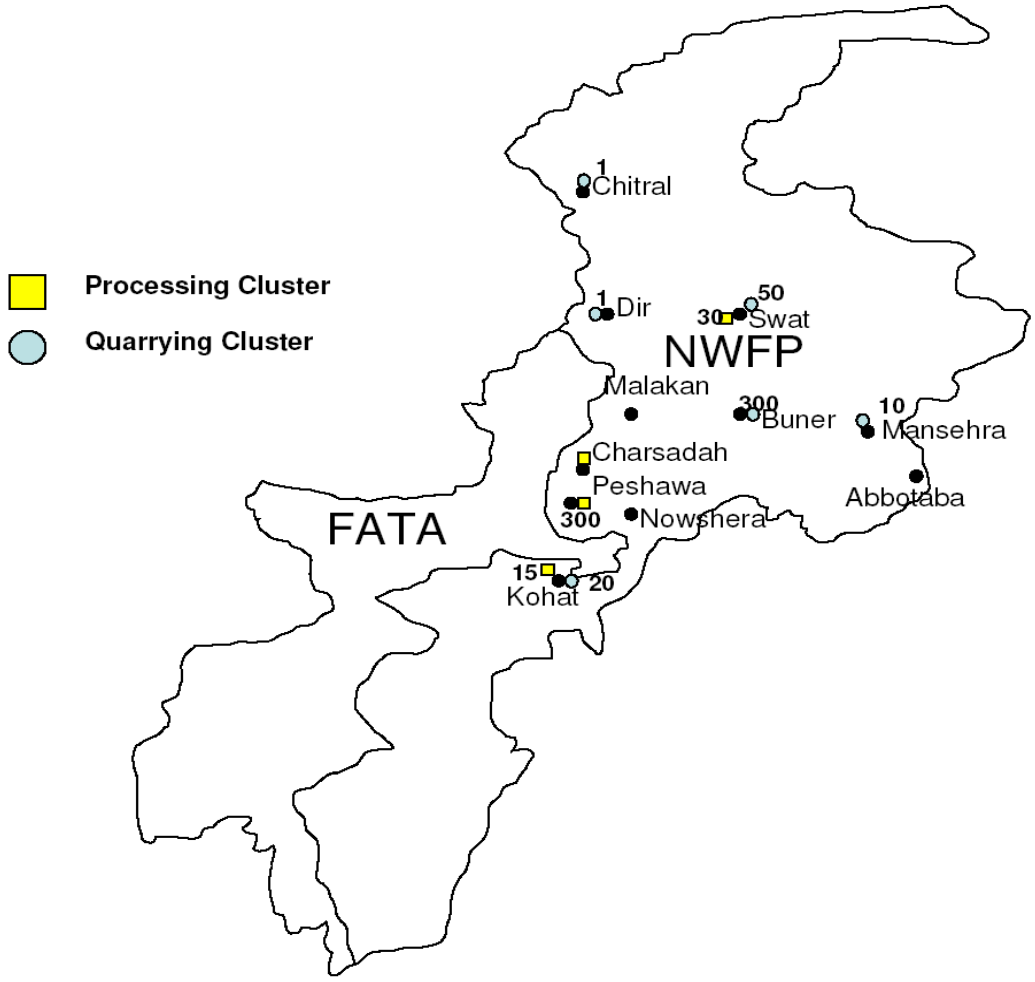
- Market services
- Auctioning of stones

e) Improve Industry Marketing and Branding through:
- Supporting companies to achieve internationally accepted product, process and service quality standards.
- Supporting the sector's market research capability to identify trends of value added products;
- Support effective sector promotion in international markets by supporting trade forums instrumental for the sector to identify (a) buyers and (b) become conversant with compliance with all import/export regulations required by buyer markets;
- Assist companies capability to comply with international labor, environmental and other buyers' requirements.

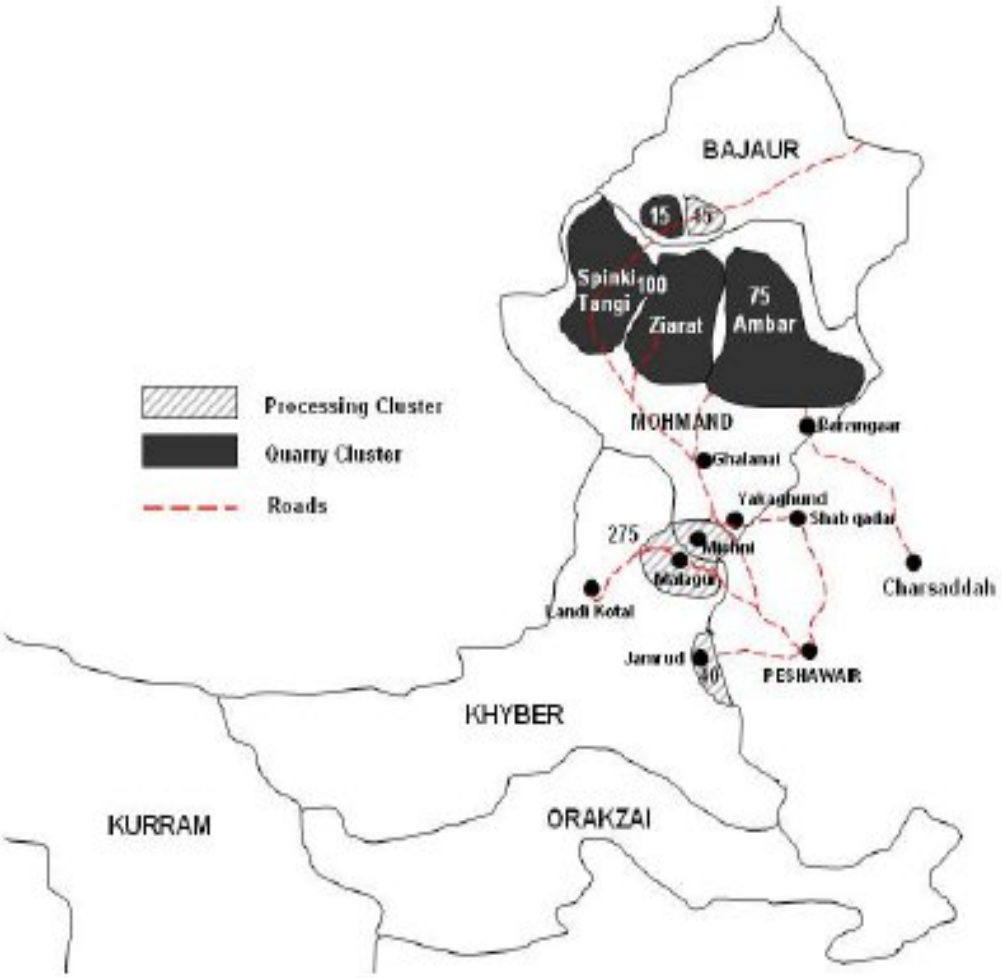
f) Support Policy Reforms for:
- a mechanism through which part of the royalty paid by mine operators is mobilized back in an efficient manner into developmental projects in the community where the mine is located:
- enforcement of benefit sharing arrangements - Mining companies are required by law to participate in benefit sharing schemes, but, this is not enforced by the government.

ANNEX A: NWFP & FATA MARBLE DEPOSITS & PROCESSING CLUSTERS

1. NWFP MARBLE & GRANITE DEPOSITS AND PROCESSING CLUSTERS



2. FATA MARBLE DEPOSITS & PROCESSING CLUSTERS



ANNEX B: EXPORTS FROM PAKISTAN

Table 5: Export From Pakistan With Average Unit Price During July – November 2009

SN	Product	November-2009		November-2008	% Change	% Achieved over Target	Jul-Nov 2009-10		Jul-Nov 2008-09	% Change	% Achieved over Target
		Target	Export	Export			Target	Export	Export		
1	Marble and Granite / ONYX MANF. (Value)	3,000	3,305	2,566	28.80	110.17	15,000	13,829	14,875	(7.03)	92.19
a)	Marble and Granite Value		2,023	1,821	11.09			8.778	7,039	24.71	
b)	ONYX MANF. Value		1,282	745	72.08			5,051	7,836	(35.54)	

Source: TDAP Website (www.tdap.gov.pk)

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Deloitte Consulting, LLP
http://www.pakistantrade.org